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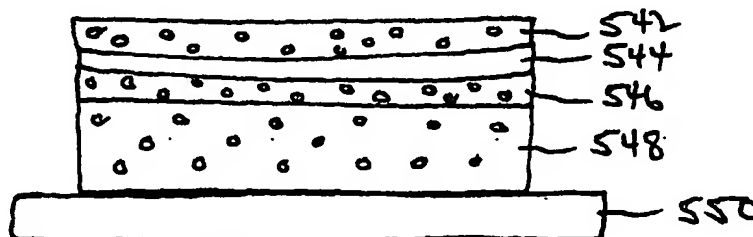
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(54) Title: STRUCTURES AND FABRICATION TECHNIQUES FOR SOLID STATE ELECTROCHEMICAL DEVICES



(57) Abstract: Provided are low-cost, mechanically strong, highly electronically conductive porous substrates and associated structures for solid-state electrochemical devices, techniques for forming these structures, and devices incorporating the structures. The invention provides solid state electrochemical device substrates (548) of novel composition and techniques for forming thin electrode/membrane/electrolyte coatings (546/544) on the novel or more conventional substrates. In particular, in one embodiment the invention provides techniques for co-firing of device substrate (548) (often an electrode) with an electrolyte or membrane layer (544) to form densified electrolyte/membrane films 5 to 20 microns thick. In another embodiment, densified electrolyte/membrane films 5 to 20 microns thick may be formed on a pre-sintered substrate by a constrained sintering process. In some cases, the substrate (548) may be a porous metal, alloy, or non-nickel cermet incorporating one or more of the transition metals Cr, Fe, Cu and Ag, or alloys thereof.

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